IN THE CLAIMS

The following claim listing replaces all prior listings and versions thereof:

1. (Currently Amended) A lens barrel comprising:

at least one optical element configured to be guided along an optical axis;

a rotatable ring rotatable about a rotational axis extending in a direction of said optical axis, said optical element ~~rotating~~ moving along said optical axis by a rotation of said rotatable ring;

an outer annular member, which is non-rotatable about said rotational axis, supporting said rotatable ring inside said outer annular member, and including at least one circumferential groove located on an inner peripheral surface of said outer annular member which faces said rotatable ring;

an advancing/retracting mechanism, provided between an outer peripheral surface of said rotatable ring and said inner peripheral surface of said outer annular member, configured to move said rotatable ring along said optical axis between front and rear limits for movement of said rotatable ring in said optical axis direction relative to said outer annular member when said rotatable ring is rotated;

at least one rotational projection located on said outer peripheral surface of said rotatable ring, wherein said at least one rotational projection is engaged in said at least one circumferential groove such that said rotatable ring is rotatable at an axial fixed position without moving along said optical axis when said rotatable ring is moved to one of said front and rear limits by said advancing/retracting mechanism; and

a stopper insertable into and removable from said at least one circumferential groove at an intermediate point between opposite ends of said at least one circumferential groove,

wherein said stopper limits the range of rotation of said rotatable ring about said rotational axis relative to said outer annular member by engaging said rotational projection in a state where said stopper is positioned in said circumferential groove, and

wherein said stopper stops preventing said range of rotation of said rotatable ring in a state where said stopper is positioned outside said circumferential groove.

2. (Original) The lens barrel according to claim 1 wherein said stopper is insertable into and removable from said circumferential groove in a radial direction of said outer annular member.

3. (Original) The lens barrel according to claim 1, wherein said rotational projection comprises a plurality of rotational projections located on said outer peripheral surface of said rotatable ring at different circumferential positions thereon,

wherein said at least one circumferential groove includes a plurality of circumferential grooves formed on said inner peripheral surface of said outer annular member at different circumferential positions thereon, and

wherein said stopper is insertable into and removable from one of said plurality of circumferential grooves.

4. (Original) The lens barrel according to claim 1, wherein said outer annular member comprises an insertion hole which radially penetrates said outer annular member between an outer peripheral surface of said outer annular member and a base of said circumferential groove,

wherein said stopper comprises:

a circumferential arm portion which extends along an outer peripheral surface of said outer annular member and is attached to said outer annular member; and

a stop projection which projects radially inwards from said circumferential arm portion, said stop projection insertable into and removable from said circumferential groove via said insertion hole.

5. (Original) The lens barrel according to claim 4, further comprising a fixing device configured to fix said circumferential arm portion to said outer annular member.

6. (Original) The lens barrel according to claim 5, wherein said fixing device comprises:

an insertion hole and a hook portion located on one and the other end of said circumferential arm portion, respectively;

a screw hole and a positioning protrusion located on said outer annular member, said positioning protrusion engageable with said hook portion; and

a set screw configured to be screwed into said screw hole through said insertion hole in a state where said positioning protrusion is engaged with said hook portion.

7. (Original) The lens barrel according to claim 1, wherein said advancing/retracting mechanism comprises:

a male helicoid located on said outer peripheral surface of said rotatable ring; and

a female helicoid located on said inner peripheral surface of said outer annular member, said female helicoid engageable with said male helicoid, wherein said female helicoid and said male helicoid are disengaged from each other when said at least one rotational projection is engaged in said at least one circumferential groove.

8. (Original) The lens barrel according to claim 7, further comprising at least one non-threaded portion formed on said inner peripheral surface of said outer annular member in an area thereon,

wherein said non-threaded portion extends generally parallel to threads of said female helicoid, and communicates with said at least one circumferential groove, and

wherein said at least one rotational projection is positioned to be associated with said non-threaded portion when said male helicoid and said female helicoid are engaged with each other.

9. (Original) The lens barrel according to claim 1, further comprising:

a second rotatable ring associated with said rotatable ring and configured to be movable relative to said rotatable ring in said optical axis direction and further configured to be rotatable together with said rotatable ring about said rotational axis;

at least one engaging projection located on an outer peripheral surface of said second rotatable ring and configured to be engaged in said circumferential groove, together with said rotational projection, in a state where said rotatable ring and said outer annular member are positioned relative to each other in said optical axis direction such that said rotational projection is engaged in said circumferential groove; and

at least one insertion/removable hole located on said outer annular member to extend in said optical axis direction and communicatively connect with said circumferential groove at an assembling/disassembling angular position on said outer annular member in a direction of rotation thereof, such that said engaging projection can be inserted into and removed from said

circumferential groove through said insertion/removable hole when said engaging projection of said second rotatable ring is rotated to said assembling/disassembling angular position,

wherein said stopper is configured to prevent said rotational projection of said rotatable ring and said engaging projection of said second rotatable ring from moving to said assembling/disassembling angular position on said outer annular member.

10. (Original) The lens barrel according to claim 9,further comprising at least one biasing member for biasing said rotatable ring and said second rotatable ring in opposite directions away from each other such that said at least one engaging projection and said at least one rotational projection are pressed against two opposed surfaces in said circumferential groove, respectively.

11. (Original) The lens barrel according to claim 1, wherein said optical element comprises at least two optical elements configured to move along said optical axis while changing a space between said at least two optical elements by a rotation of said rotatable ring.

12. (Original) The lens barrel according to claim 1, wherein said lens barrel is incorporated in a camera, and

wherein said outer annular member includes a stationary barrel fixed to a camera body of said camera.

13. (Original) A lens barrel comprising:

at least one optical element configured to be guided along an optical axis;

a pair of rotatable rings rotatable about a rotational axis extending in a direction of said optical axis, said optical element rotating along said optical axis by a rotation of said pair of rotatable rings;

an outer annular member which is non-rotatable about said rotational axis, supporting said pair of rotatable rings inside said outer annular member, and including at least one circumferential groove located on an inner peripheral surface of said outer annular member which faces said pair of rotatable rings;

an advancing/retracting mechanism, provided between an outer peripheral surface of said pair of rotatable rings and said inner peripheral surface of said outer annular member, for moving said pair of rotatable rings along said optical axis between front and rear limits for movement of said pair of rotatable rings in said optical axis direction relative to said outer annular member when said pair of rotatable rings is rotated;

at least one rotational projection located on an outer peripheral surface of one of said pair of rotatable rings, wherein said at least one rotational projection is engaged in said at least one circumferential groove such that said pair of rotatable rings is rotatable at an axial fixed position without moving along said optical axis when said pair of rotatable rings is moved to one of said front and rear limits by said advancing/retracting mechanism;

at least one engaging projection located on an outer peripheral surface of the other of said pair of rotatable rings to be engaged in said at least one circumferential groove, together with said at least one rotational projection, in a state where said pair of rotatable rings and said outer annular member are positioned relative to each other in said optical axis direction such that said at least one rotational projection is engaged in said at least one circumferential groove;

at least one insertion/removable hole located on said outer annular member such that said at least one engaging projection can be inserted and removed into and from said at least one circumferential groove through said insertion/removable hole when said at least one rotational

projection of said pair of rotatable rings rotates to an assembling/disassembling angular position on said outer annular member in a direction of rotation thereof; and

a stopper insertable and removable into and from said at least one circumferential groove at an intermediate point between opposite ends of said at least one circumferential groove,

wherein said stopper is engageable with said at least one rotational projection to prevent said at least one rotational projection of said pair of rotatable rings from rotating to said assembling/disassembling angular position in a state where said stopper is in said at least one circumferential groove, and

wherein said stopper stops preventing said at least one rotational projection of said pair of rotatable rings from rotating to said assembling/disassembling angular position in a state where said stopper is positioned outside said circumferential groove.

14. (Original) The lens barrel according to claim 13 wherein said stopper is insertable into and removable from said circumferential groove in a radial direction of said outer annular member.

15. (Original) The lens barrel according to claim 13, further comprising at least one biasing member for biasing said pair of rotatable rings in opposite directions away from each other such that said at least one engaging projection and said at least one rotational projection are pressed against two opposed surfaces in said circumferential groove, respectively.

16. (Original) The lens barrel according to claim 13, wherein said lens barrel is a telescoping lens barrel having a plurality of concentrically-arranged external movable barrels, and wherein said other of said pair of rotatable rings is one of said plurality of external movable barrels.

17. (Original) The lens barrel according to claim 16, wherein said lens barrel is incorporated in a camera, said plurality of concentrically-arranged external movable barrels being retracted into a camera body of said camera upon power of said camera being turned OFF.

18. (New) A digital camera comprising a body and a lens barrel housed in the body, digital camera further comprising an image display panel affixed to the body, the lens barrel comprising:

at least one optical element configured to be guided along an optical axis;

a rotatable ring rotatable about a rotational axis extending in a direction of said optical axis, said optical element moving along said optical axis by a rotation of said rotatable ring;

an outer annular member supporting said rotatable ring inside said outer annular member, and including at least one circumferential groove located on an inner peripheral surface of said outer annular member which faces said rotatable ring;

an advancing/retracting mechanism, provided between an outer peripheral surface of said rotatable ring and said inner peripheral surface of said outer annular member, configured to move said rotatable ring along said optical axis between front and rear limits for movement of said rotatable ring in said optical axis direction relative to said outer annular member when said rotatable ring is rotated;

at least one rotational projection located on said outer peripheral surface of said rotatable ring, wherein said at least one rotational projection is engaged in said at least one circumferential groove such that said rotatable ring is rotatable at an axial fixed position without moving along said optical axis when said rotatable ring is moved to one of said front and rear limits by said advancing/retracting mechanism; and

a stopper insertable into and removable from said at least one circumferential groove at an intermediate point between opposite ends of said at least one circumferential groove,

wherein said stopper limits the range of rotation of said rotatable ring about said rotational axis relative to said outer annular member by engaging said rotational projection in a state where said stopper is positioned in said circumferential groove, and

wherein said stopper stops preventing said range of rotation of said rotatable ring in a state where said stopper is positioned outside said circumferential groove.

19. (New) The camera according to claim 18 wherein said stopper is insertable into and removable from said circumferential groove in a radial direction of said outer annular member.

20. (New) The camera according to claim 18, wherein said rotational projection comprises a plurality of rotational projections located on said outer peripheral surface of said rotatable ring at different circumferential positions thereon,

wherein said at least one circumferential groove includes a plurality of circumferential grooves formed on said inner peripheral surface of said outer annular member at different circumferential positions thereon, and

wherein said stopper is insertable into and removable from one of said plurality of circumferential grooves.

21. (New) The camera according to claim 18, wherein said outer annular member comprises an insertion hole which radially penetrates said outer annular member between an outer peripheral surface of said outer annular member and a base of said circumferential groove,

wherein said stopper comprises:

a circumferential arm portion which extends along an outer peripheral surface of said outer annular member and is attached to said outer annular member; and

a stop projection which projects radially inwards from said circumferential arm portion, said stop projection insertable into and removable from said circumferential groove via said insertion hole.

22. (New) The camera according to claim 21, wherein said lens barrel further comprises a fixing device configured to fix said circumferential arm portion to said outer annular member.

23. (New) The camera according to claim 22, wherein said fixing device comprises:

an insertion hole and a hook portion located on one and the other end of said circumferential arm portion, respectively;

a screw hole and a positioning protrusion located on said outer annular member, said positioning protrusion engageable with said hook portion; and

a set screw configured to be screwed into said screw hole through said insertion hole in a state where said positioning protrusion is engaged with said hook portion.

24. (New) The camera according to claim 18, wherein said advancing/retracting mechanism comprises:

a male helicoid located on said outer peripheral surface of said rotatable ring; and

a female helicoid located on said inner peripheral surface of said outer annular member, said female helicoid engageable with said male helicoid, wherein said female helicoid and said male helicoid are disengaged from each other when said at least one rotational projection is engaged in said at least one circumferential groove.

25. (New) The camera according to claim 24, wherein said lens barrel further comprises at least one non-threaded portion formed on said inner peripheral surface of said outer annular member in an area thereon,

wherein said non-threaded portion extends generally parallel to threads of said female helicoid, and communicates with said at least one circumferential groove, and

wherein said at least one rotational projection is positioned to be associated with said non-threaded portion when said male helicoid and said female helicoid are engaged with each other.

26. (New) The camera according to claim 18, wherein said lens barrel further comprises:

a second rotatable ring associated with said rotatable ring and configured to be movable relative to said rotatable ring in said optical axis direction and further configured to be rotatable together with said rotatable ring about said rotational axis;

at least one engaging projection located on an outer peripheral surface of said second rotatable ring and configured to be engaged in said circumferential groove, together with said rotational projection, in a state where said rotatable ring and said outer annular member are positioned relative to each other in said optical axis direction such that said rotational projection is engaged in said circumferential groove; and

at least one insertion/removable hole located on said outer annular member to extend in said optical axis direction and communicatively connect with said circumferential groove at an assembling/disassembling angular position on said outer annular member in a direction of rotation thereof, such that said engaging projection can be inserted into and removed from said

circumferential groove through said insertion/removable hole when said engaging projection of said second rotatable ring is rotated to said assembling/disassembling angular position,

wherein said stopper is configured to prevent said rotational projection of said rotatable ring and said engaging projection of said second rotatable ring from moving to said assembling/disassembling angular position on said outer annular member.

27. (New) The camera according to claim 26, wherein said lens barrel further comprises at least one biasing member for biasing said rotatable ring and said second rotatable ring in opposite directions away from each other such that said at least one engaging projection and said at least one rotational projection are pressed against two opposed surfaces in said circumferential groove, respectively.

28. (New) The camera according to claim 18, wherein said optical element comprises at least two optical elements configured to move along said optical axis while changing a space between said at least two optical elements by a rotation of said rotatable ring.

29. (New) The camera according to claim 18, wherein said outer annular member includes a stationary barrel housed in the body.

STATEMENT OF SUBSTANCE OF INTERVIEW

Applicant wishes to express his appreciation to Examiner Gray for the interview of March 15, 2005. During the interview, Applicant's representative, Attorney William Boshnick, spoke to the Examiner concerning the rejected claims of the present invention. Specifically, Attorney Boshnick showed a model of an embodiment of the present claimed invention as well as a model similar to that disclosed in the applied NOMURA US 2002/0135900 Publication (in which the present inventor is a common inventor), and demonstrated how this reference failed to teach or suggest the invention as claimed in rejected claims 1, 2, 7, 8, 11 and 12. The Examiner agreed that the prior art of record fails to teach or suggest at least the feature "at least one rotational projection located on said outer peripheral surface of said rotatable ring, wherein said at least one rotational projection is engaged in said at least one circumferential groove such that said rotatable ring is rotatable at an axial fixed position without moving along said optical axis when said rotatable ring is moved to one of said front and rear limits by said advancing/retracting mechanism," as claimed in independent claim 1.